Hardy Fern Foundation Quarterly

Spring 2011

THE HARDY FERN FOUNDATION

P.O. Box 3797

Federal Way, WA 98063-3797

Web site: www.hardyferns.org

The Hardy Fern Foundation was founded in 1989 to establish a comprehensive collection of the world's hardy ferns for display, testing, evaluation, public education and introduction to the gardening and horticultural community. Many rare and unusual species, hybrids and varieties are being propagated from spores and tested in selected environments for their different degrees of hardiness and ornamental garden value.

The primary fern display and test garden is located at, and in conjunction with, The Rhododendron Species Botanical Garden at the Weyerhaeuser Corporate Headquarters, in Federal Way, Washington.

Satellite fern gardens are at the Birmingham Botanical Gardens, Birmingham, Alabama, California State University at Sacramento, California, Coastal Maine Botanical Garden, Boothbay , Maine. Dallas Arboretum, Dallas, Texas, Denver Botanic Gardens, Denver, Colorado, Georgeson Botanical Garden, University of Alaska, Fairbanks, Alaska, Harry P. Leu Garden, Orlando, Florida, Inniswood Metro Gardens, Columbus, Ohio, New York Botanical Garden, Bronx, New York, and Strybing Arboretum, San Francisco, California.

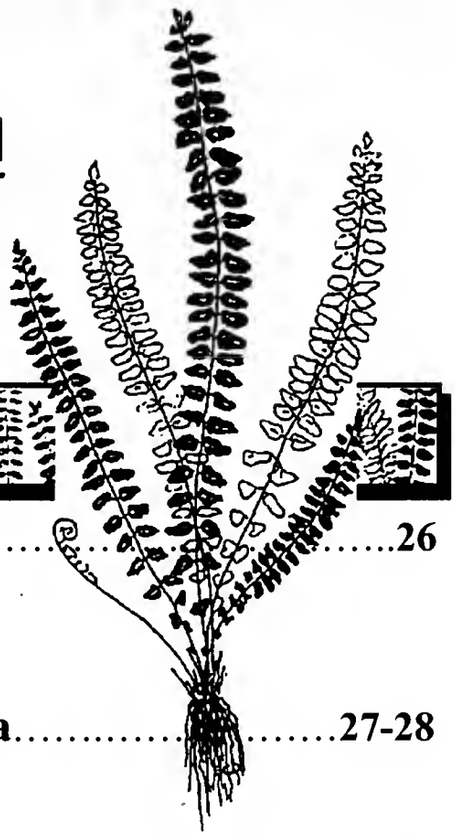
The fern display gardens are at Bainbridge Island Library. Bainbridge Island, WA, Bellevue Botanical Garden, Bellevue, WA, Lakewold, Tacoma, Washington, Lotusland, Santa Barbara, California, Les Jardins de Metis, Quebec, Canada, Rotary Gardens, Janesville, WI, and Whitehall Historic Home and Garden, Louisville, KY.

Hardy Fern Foundation members participate in a spore exchange, receive a quarterly newsletter and have first access to ferns as they are ready for distribution.

Cover design by Willanna Bradner

HARDY FERN FOUNDATION QUARTERLY

THE HARDY FERN FOUNDATION QUARTERLY



SPRING PRESIDENT'S MESSAGE 2011

Spring greetings,

The Pacific Northwest is experiencing one of the wettest and coolest springs since 1945. Our fern population is slow to emerge and the fronds from last year look more stressed than ever.

A small group of Hardy Fern Foundation board members and volunteers, Willanna Bradner and Nancy Daar planted approximately 100 ferns at the Bellevue Botanical Garden this past April weekend. We were rewarded by a nice, sunny, albeit cool breezy day to complete our task. This was a timely event, as on the following Saturday, April, 16, we will participate in an Earth Day-Arbor Day 2011 celebration also at the Bellevue Botanical Garden. The Hardy Fern Foundation will have a booth offering plants for sale along with brochures and information regarding care of ferns. The competition with other plant sales occurring in the area and the lateness of spring weather will prove to be a challenge in providing plants but we look forward to sharing both information and plants with the public.

We are pleased to announce that the Netherlands Fern Society (*Nederlandse Varen-vereniging*) and the Indian Fern Society have requested reciprocal relationships with the HFF. We are very happy to participate in this exchange. Dr. S. P. Khullar, a well known author and secretary of the Indian Society presents an article describing their history, activities and membership information on page 44 of this issue. An article featuring the Netherlands Fern Society will appear in a future issue.

We continue to pursue the opportunity to establish a small fern garden in the name of Dr. Jack Docter at the Children's Hospital in Bellevue, Washington. Hopefully we will come together with a plan soon.

If any of our members would like to visit the main display garden and stumpery at Rhododendron Species Foundation Garden, please contact us for directions or a tour. After all, this garden belongs to every one of you and we hope you will be able to enjoy it.

Fern Festival 2011 will be Friday, June 3-4, 2011 at the Center For Urban Horticulture. Marietta O'Byrne, noted shade gardening and hellebore expert will lecture. Please see the notice in this issue of the Quarterly.

Thanks to all of you who have participated in the past to make our organization an on-going success.

In 2011, 7 billion people will populate the earth and with finite resources and infinite consumption, preservation and replenishment of the environment should stimulate all of us to be better gardeners.

Happy gardening, especially ferning,

Patrick D. Kennar

Woodsia scopulina
Mountain cliff fern, Rocky mountain woodsia

James R. Horrocks
Salt Lake City, UT

The genus *Woodsia* was named in honor of the British architect and botanist Joseph Woods in 1813 by Robert Brown. The genus includes about 40 species worldwide in temperate climates of mainly the northern hemisphere but also in high mountains of the tropics and in the southern hemisphere as well. They are found mostly on exposed sites among rocks and quite tolerant of sunny exposures, especially in alpine areas. The species name "scopulina" alludes to "rocky places" and also "bristly". It is described as epipetric in cliffs and ledges, rock crevices, under rocks on soil, and on talus slopes, the soil being sub-acid. It is frequently encountered from 4000 to 12000 foot elevations. It is considered rare and disjunct in Quebec and the Great Lakes area but more widespread in western North America from coastal Alaska south to central California, Arizona, Utah and across to, once again, disjunct populations in Arkansas to North Carolina.

W. scopulina is rather variable and has been divided recently into three subspecies, although in *A Monographic Study of The Fern Genus Woodsia* (1964) by D. F. M. Brown, the variety *appalachiana* was not considered consistently different from variety *scopulina.* *(See photo pg. 37)* Be that as it may, this species and its varieties are often confused with *W. oregana* and, where their ranges overlap, with *W. mexicana*, and it often takes an expert to tell the difference. An additional problem concerns the occasional difficulties in distinguishing some *Woodsia* species from *Cystopteris*, particularly when they are quite young or when they are so mature that the true structure of the sori and indusia are not clear. However, *Cystopteris* has thinner, more transparent fronds with distinct veins while in *Woodsia* the fronds are a thicker opaque green with indistinct or obscure veins. The old broken off stipes persist in *Woodsia* but are absent in *Cystopteris* and the spores of woodsias are brown while those of cystopteris are black.

W. scopulina hybridizes with *W. ilvensis* producing the sterile diploid *W. x abbeae* in the Great Lakes area and there is also a probable cross with tetraploid plants of *W. oregana* to produce the sterile triploid *W. x maxonii* from Ontario, Canada.

Description: The rhizome is erect to ascending, producing glossy chestnut-brown stipes that are darker at the base. The stipes display concolorous pale brown scales or even bicolorous scales with dark brown central stripes. The stipes are not articulate, that is, they lack joints as in *W. ilvensis*, but like many other woodsias, the stipes break off unevenly and persist. The deciduous fronds are from 4 to 12 inches long, about the same length as *W. oregana* and *W. mexicana.* By contrast, the fronds of *W. obtusa* can be 16 inches long, putting them in the same league with the comparatively lengthy *W. manchuriensis* from northeastern Asia and the Himalayan *W. elongata.* The fronds of *W. scopulina* are elliptic-lanceolate, pinnate-pinnatifid, and widest at or below the middle of the frond. The pinnae taper toward the base, often ending in greatly reduced distant pinnae. The apex of the frond is somewhat congested and acute. The pinnae are oblong-lanceolate and pinnatifid, acute, with glandular hairs on the underside. The oblong pin-

nules are crenate-serrate to lobed, the apex obtuse, the base broadly decurrent. The sori are found near the margins and the indusia are split into narrow segments, becoming inconspicuous at maturity.

Culture: Lellinger mentions that this species is cultivated in moist garden soil in partial sun in rock gardens of cooler climates. The variety or subspecies *appalachiana* has responded to cultivation perhaps more so than the type species. Here in Utah, where the valleys can become quite hot in summer, this quaint little fern is best left in the mountains where it is encountered no less than ten miles from my home. It prefers a sub-acid soil and is usually found, at least in Utah, only in areas of igneous or metamorphic rocks, never on limestone. For those who live in cooler climes, this little gem may be willing to adapt to a partly sunny, rocky habitat with a cool root run.

References: *Encyclopedia of Garden Ferns* (2007) Sue Olsen, Timber Press, Portland

A Field Manual of the Ferns and Fern Allies of the United States and Canada (1985) David B, Lellinger, Smithsonian Institute Press, Washington D.C.

The Fern Guide (1961) Edgar T. Wherry, Double Day, New York

Ferns of Utah (1944) Seville Flowers, University of Utah, Salt Lake City

Fern Growers Manual (Revised - 2001) Barbara Joe Hoshizaki and Robbin C. Moran, Timber Press, Portland

A Monographic Study of the Fern Genus Woodsia (1964) Donald F. M. Brown, Verlag Von J. Cramer, Weinheim, Germany

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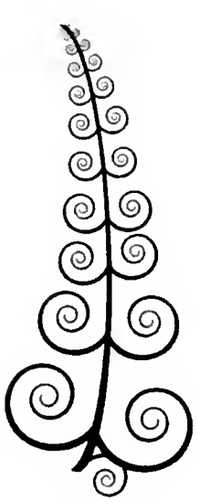
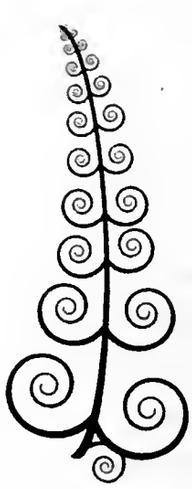
Welcome New Members



Greg Graves
Mollie Groendyke
Andy Hill
Sam Pattison
Larry & Debbie Quick



FERNS OF HAWAI'I ~ Part II

Joan Eiger Gottlieb
Pittsburgh, PA

"Ferns of Hawai'i" (September 13-23, 2010) was the fourth extended workshop sponsored by The University of California (Berkeley)/Jepson Herbarium, each taught by neotropical fern specialist, Dr. Alan R. Smith. It was an irresistible opportunity to savor the ferns of "paradise."

Part II. HAWAI'I ISLAND

The Big Island of Hawai'i is aptly called "The Volcano Island," although all the major land masses in the Hawai'ian chain are volcanic in origin. It is twice the size of all the other islands combined (95 miles north-south and 80 miles east-west) and is home to several massive volcanic peaks, including Mauna Kea (arguably the tallest peak in the world at nearly 14,000' above sea level and 18,000' below the water). Mauna Loa, almost as high, is equally impressive and both peaks can sport seasonal snowcaps. Kilauea is the lowest peak at only 4,078' above water but is the most active, erupting nearly a hundred times over the past century.

First impressions of this youngest Hawai'ian Island were favorable. The large presence of Volcanoes National Park and the good work of several active environmental groups (e.g. The Nature Conservancy, Pele Defense Fund, Earthjustice et al.) offer hope that the balance between development and conservation may be struck more equitably here than it has on many of the other islands. Our accommodations at Volcano Inn in Volcano Village (near the National Park Headquarters) were energy-efficient units nestled into a restored grove of ***Cibotium***. Rooms were above the canopy or snuggled against the foliage of these impressive tree ferns – a most "frondly" view.

Six fern-rich sites were explored, starting with the **Ola'a Forest Reserve** (elevation 3,800' – 4,400'), only a short distance from the inn. As with most remnant forests on the islands, this one is completely fenced to keep out destructive, introduced ungulates. The Reserve is a research area of Volcano National Park and is divided into transects and tracts by a confusing array of colored ribbons and metallic markers. Scampering (ungracefully by some) over the sturdy fence at Tracts 18 and 16, and bushwhacking our way along the blue ribbon "line," we tried to leave the area as undisturbed as possible. Our reward was being part of a nearly pristine rain forest dominated by ***Cibotium glaucum*** and ***C. menziesii.*** Other old friends were quickly spotted, e.g. ***Grammitis tenella, Psilotum complanatum, Elaphoglossum paleaceum, Pneumatopteris sandwicensis, Nothoperanema rubiginosa, Asplenium contiguum***, and many more. Four new finds were added to the trip list – ***Asplenium lobulatum*** (bearing a vegetative bud), ***Grammitis hookeri, Mecodium recurvum,*** and ***Vandenboschia davallioides.*** *(See photo pg. 37)* Having no developed trails, these tracts were the most difficult of the trip and ended in a panicky retreat when Amanda Vernon and Alan Smith were attacked by

a colony of very angry wasps. Despite painful bites and swellings both team leaders recovered well and were ready for the next day's forays – a great relief for all.

The **Thurston Lava Tube** at Kilauea Volcano lies at the base of a steep incline into a pit crater surrounded by rain forest. Near the trail entrance ***Amauropelta globulifera*** arched over the bank and a discussion of thelypteroid fern characters ensued. Nearer the tube itself ***Macrothelypteris torresiana*** and ***Selaginella kraussiana*** were added to the list of "in the wild" finds. Lava tubes develop when channelized lava flows harden at the surface while hot, molten lava continues to move on and out below, leaving a cylinder that can be up to 30' in diameter. Thurston is about 600' long and 10' high and wide. Walking through lava tubes can be treacherous, but Thurston is paved, lighted, and well ventilated, with plant roots penetrating the ceiling and pale plants of ***Adiantum raddianum*** growing around the light sconces.

Kilauea Iki Trail in the same area of Volcanoes N.P. descends into a large, collapsed crater of Kilauea through a beautiful fern forest. We reviewed previous fern finds and puzzled over the identities of many juvenile plants thriving on the moist banks. On fractured lava surrounding the crater ***Polypodium pellucidum*** var. ***vulcanicum***, (*see photo pg. 37*) was a new find. It has long, narrow blades, thick, numerous, crowded, overlapping pinnae, and the diagnostic translucent veins implied in its species name. The more widespread ***P. pellucidum*** var. ***pellucidum*** grew nearby in more wooded areas uphill of the crater. According to Palmer's book, these are true varieties (rather than ecotypes) because in cultivation the lobes of var. ***vulcanicum*** remain more numerous and closely packed, indicating permanent genetic change. In the crater area large stands of a sun ecotype of ***Nephrolepis exaltata*** shared the lava fissures with *Vaccinium reticulatum* (Ericaceae), *Styphelia tameiameide* (Epaceridaceae), and other flowering shrubs.

The **Kipuka Puaulu Loop Trail** off the Kilauea Road in Volcanoes N.P. circles an old lava island surrounded by more recent flows. It has well-developed soil and is considered a bird and plant sanctuary. A family of introduced Kalij pheasants crossed our path several times and native forest birds were sighted in the trees. Normally a mesic koa forest, the area was obviously suffering from the long drought afflicting Hawai'i. Crispy fronds of ***Asplenium trichomanes*** subsp. ***densum*** and ***A. adiantum-nigrum*** were found near the trail entrance. On the other hand, bracken – ***Pteridium aquilinum*** var. ***decompositum*** was in prime condition, giving us a chance to note its "pinched" pinna character and heavy undersurface hairiness. ***Cyrtomium falcatum***, ***C. caryotideum***, and ***Pteris cretica*** were in good condition.

An evening trip to the drivable end of Chain of Craters Road brought "oo's" and "ah's" for its red-tinged vent "smoke" after dark. The landscape here is subject to sporadic volcanic activity and dangerous sulfurous fumes. Shore-hugging villages in Kalapana and Kaimu were annihilated recently by advancing lava flows from volcanic vents eight miles upland. This is one of the most unstable areas in the world. At the coast lava spills into the sea creating spumes of liquids and solids, plus acres of new land!

Two Nature Conservancy (TNC) preserves on the western (Kona) side of Ha-

wai'i provided a grand finale for the workshop. The preserves, at between 3,000' and 6,000' elevation on the flanks of Mauna Loa are not open for public use and are accessible from the nearest paved surface only by 4-wheeled transport over bone-bouncing lava tracks. Conservancy personnel met us with appropriate vehicles, opened each of several locked gates en route, and served as knowledgeable guides on the trails. The preserves, formerly natural areas at the edge of ranches, have been fenced and hunted free of feral pigs.

Kona Hema Preserve was first. Laura Nelson from The Nature Conservancy met us and introduced Mel Johansen, manager of the 4,000 acre preserve acquired piecemeal since 1998. An adjacent parcel of equal size is state forest "managed." The area was covered by a large lava flow in 1926 and Mel's grandfather camped on the cooling lava at the time. On the lower trail, at 3,000' elevation, iconic specimens of ***Sadleria cyatheoides*** were common, spreading pink (young), green (mature), and skirts of gray (dead) fronds over bare lava rock, exactly as pictured on the cover of Palmer's book. Both varieties of ***Polypodium pellucidum*** were here. Sun-bleached, weirdly orange specimens of ***Psilotum nudum*** and ***Phymatosorus grossus*** were companion pioneers on aging, lichen-covered lava. As we entered a koa forest Hawai'i amakihi were quickly spotted. Based on color, size, and bill variations, it appears that these birds are evolving into different species on the Hawai'ian islands much as the finch and mockingbird did in the Galapagos There were stunning specimens of ***Dryopteris wallichiana*** and ***D. glabra***. ***Dryopteris hawaiiensis*** was a "new find" - a handsome fern with dark, prominent scales on its rachises and costae. Fertile, green plants of ***Asplenium adiantum-nigrum*** and ***A. trichomanes*** subsp. ***densum*** were a joy after the disappointing, crispy ones at Kipuka Puaulu. Huge plants of ***Pteris excelsa*** were here as well as a single specimen of ***Pteris hillebrandii*** - a putative hybrid between ***P. cretica*** and ***P. irregularis.*** It resembles its ***P. cretica*** parent, but has a partially winged rachis and random projections from its basal pinnae – genetic nods toward ***P. irregularis***.

After lunch on the porch of the Nature Conservancy cabin (which has accommodations for researchers) it was back into the 4-wheelers for the climb to a 6,000' section of the reserve. Weathered lava along the fence was home to several plants of ***Pellaea ternifolia***, a diploid Hawai'ian strain in a generally tetraploid complex. They were the subject of a trailside talk by workshop participant Layne Huiet, based on her recent research using genetic markers. The Hawai'ian ***Pellaea*** plants appear to have originated from New World sources in the southwestern U.S. or Mexico. An invasive, prostrate *Polygonum* sp. hugged the surface of the lava trail. Two introduced, naturalizing ferns – ***Pteris vittata*** and ***Adiantum hispidulum*** - were seen. A great find was ***Polystichum hillebrandii***, *(See photo pg. 36)* an endemic beauty of Asian origin, forming impressive clumps in old pasture grass. Its young stipes are endowed with impressive, bushy, orange-red scales. On the **Hono Moleno Loop Trail** through a tract of verdant rain forest we saw colonies of ***Selaginella arbuscula*** perched on a moist ledge, as well as what appeared to be our first sighting of ***Elaphoglossum parvisquameum.*** Along the trail TNC staff members recently planted 600 seedlings of *Pritchardia schattaueri*, an endemic palm known from only 14 remaining wild specimens.

Our last day was spent exploring a second Nature Conservancy Preserve – **Kaiholena**. John Replogle and Shalan Crysdale were our drivers and guides to a 3,500-

acre area that has had partnership fencing with the Tri-Mountain Alliance (local, state, and national groups) since 1962. There is abutting acreage on which ranching is permitted, keeping developers at bay. Our shoes were thoroughly brush-cleaned of clinging seeds, a Polynesian chant was recited to announce our presence, and off we went on a trail through a fern-rich, wet forest. Many species we had come to know and love were growing lushly. ***Elaphoglossum parvisquameum*** was vigorous here, with clear, identifying characters, including parallel veins that coalesce along the frond edge, adding confidence that we had, in fact, seen it the previous day. There were fertile specimens of ***Callistopteris baldwinii***, a stunning, endemic, filmy fern with fronds that resemble erect feathers on the wet forest duff. Another filmy species, ***Vandenboschia cyrtotheca*** went onto our record list. A "nursery" of young ***Marattia douglasii*** sporophytes was of interest, and a juvenile, non-fertile plant of ***Ophioderma pendulum*** was dangling from a ***Cibotium*** trunk, another first for the list. ***Cibotium chamissoi*** was also a "first-time" fern find. It has a thin trunk draped in a skirt of dead fronds.

Hawai'i has three endemic fern genera - ***Adenophorus*** with 9-10 species (Grammitidaceae), ***Diellia*** with 6 rare species (Aspleniaceae; recent molecular evidence suggests that ***Diellia*** belongs in a polymorphic ***Asplenium***), and ***Sadleria*** with 6 species (Blechnaceae). Altogether there are ca. 106 endemic fern and 8 fern ally species on the islands. There are also endemic subspecies and varieties that add to the total. Most ferns encountered during the workshop are described by Palmer as "found on all major islands." Notable exceptions are the Kaua'i endemics ***Adenophorus epigaeus,*** *(See photo pg. 36)* ***Cibotium nealiae,*** and ***Sadleria wagneriana,*** the last restricted to the Koke'e area. ***Asplenium trichomanes*** subsp. ***densum*** and ***Polystichum hillebrandii*** are known only from Maui and Hawai'i. ***Elaphoglossum aemulum,*** seen more than once on Kaua'i and known from several of the other major islands, has not made its way to the Big Island. On the other hand, ***E. parvisquameum*** and ***Polypodium pellucidum*** var. ***vulcanicum***, so striking on Hawai'i, and known from a couple of the other islands, are missing from Kaua'i. It is notable that widespread genera like ***Equisetum, Osmunda***, and ***Botrychium*** are absent from the islands. One very rare species of the latter has not been seen for nearly a century and is presumed gone. Microclimate differences, volcanic soil age, host substrates for epiphytes, spore dispersal rates (***Equisetum*** and ***Osmunda*** have short-lived, green spores), and gametophyte growth requirements (***Botrychium*** has subterranean, mycorrhizal-dependent, sexual plants) are but a few of the factors that may influence the distribution of Hawai'ian pteridophytes. However, introduced plants and animals may be just as great a threat to the continued existence of native ferns and the ecosystems that sustain them, despite heroic efforts by The Nature Conservancy and others.

A Hawai'ian hawk perched photogenically on a fence post as we left the Kaiholena Preserve - a perfect end to the foray. There were stops at Will and Grace's Coffee shop for Ka'u coffee (voted best of the year in world-wide competition) and at Volcano Winery as we headed back to base. With brains full of all those great fern finds (and their Latin names!) our great adventure ended in an evening banquet (of take-out Hawai'ian food) on the wrap-around lanai of the inn-owner's house. A "very pink" birthday cake for participant Jeong Lee and homemade brownies from Heather Driscoll added a culminating sweetness. There were heartfelt accolades and tokens of appreciation for trip leader Alan Smith and his energetic, knowledgeable assistants, Heather and

Amanda. John Game and Amanda Vernon added interest and identifications for seed plant sightings. Joan Smith identified the birds and was constant in making sure no one was left behind on the trails. Everyone contributed enthusiasm, camaraderie, and individual expertise. It doesn't get any better than this.

REFERENCES, ACKNOWLEDGEMENTS, AND NOTES

Palmer, Daniel D. 2003. ***Hawai'i's Ferns and Fern Allies***. Honolulu, University of Hawai'i Press. (The nomenclature in this report follows that in Palmer's book.)

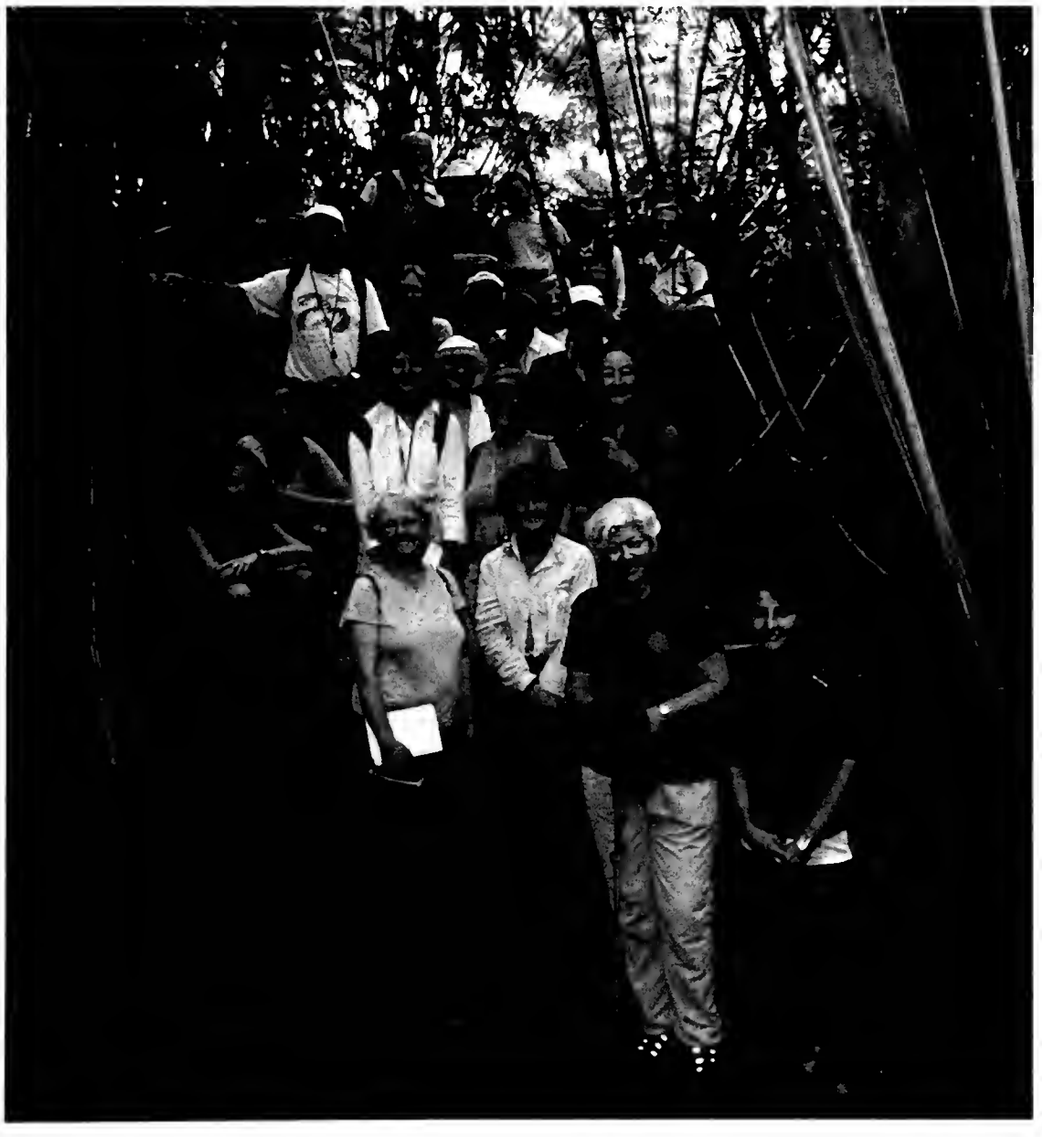
"Hiking Kaua'i's Highlands on Koke'e Trails." Map and informational brochure. Division of State Parks, 3060 Eiwa St. #306, Lihu'e HI 96766-1875.

A fern list for the Jepson Herbarium "Ferns of Hawai'i Workshop," September, 2010, compiled by Joan Gottlieb, Layne Huiet, and Alan R. Smith September, 2010 is available by e-mail to: milton.gottlieb@verizon.net

Photos from the "Ferns of Hawai'i Workshop" are posted, courtesy of Heather Driscoll, with auxiliary submissions from other contributors at: (http://www.flickr.com/photos/hawaiianferns/).

Photos by Tom Ballinger at http://www.flickr.com/photos/polylepis

Special appreciation is owed to Dr. Alan R. Smith for his review and correction of this report.



Dr. Alan Smith leading members of the Hawai'i fern foray.
Photo courtesy of Tom Ballinger

Hardy Fern Foundation at the Northwest Flower and Garden Show - Pyrrosia

Posted on February 28, 2011 by Nancy Strahle

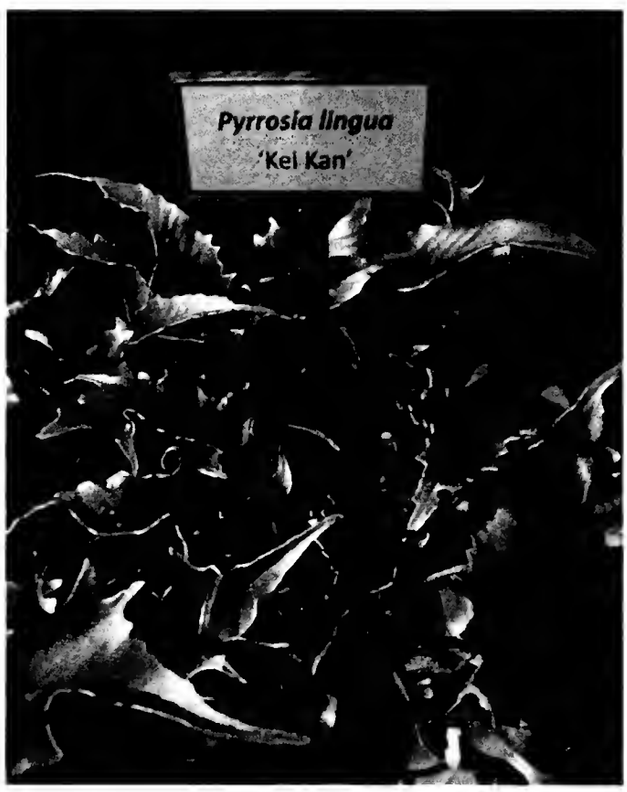
I'm a member of the Hardy Fern Foundation (www.hardyferns.org). Not an "academic" member, just a fan of ferns. I don't know why! My true fan status began a few years ago when we did a major garden remodel, and I was working on the design and the choice of plants. Through other associations –Northwest Horticultural Society (www.northwesthort.org), classes at the Elizabeth Miller Garden (www.millergarden.org) in Seattle–, research, and events, I got a little closer to developing a thing for ferns.

***Pyrrosia lingua* - 'Futaba Shishi'**

As a member of the Hardy Fern Foundation, I had the opportunity to staff the HFF booth at the Northwest Flower and Garden Show last week. This show is always like a breath of fresh air in the middle of winter. (Did you know it's been freezingly cold, snowing, and now downpouring around here for the last couple of weeks, with more on the way? So much for the blue skies we enjoyed at the beginning of the month.)

The NWFGS was wonderful as usual, but I was surprised to be treated to a special display of pyrrosias in the HFF booth! These ferns are a little bit different, somewhat rare and expensive, and perhaps not everybody's cup of tea. These pyrrosias were part of Richie Steffen's personal collection, and I really enjoyed spending a few hours with them. If you are unfamiliar with them, here are some pictures. (*continued on page 38*)

***Pyrossia* 'Tachiba Koryu'**



***Pyrrosia* 'Kei Kan'**

Fernery at the Institute of Bioresource Technology, Palmpur, India at its opening ceremony. November 11, 2010.
Photo courtesy of
Joanne M. Sharpe

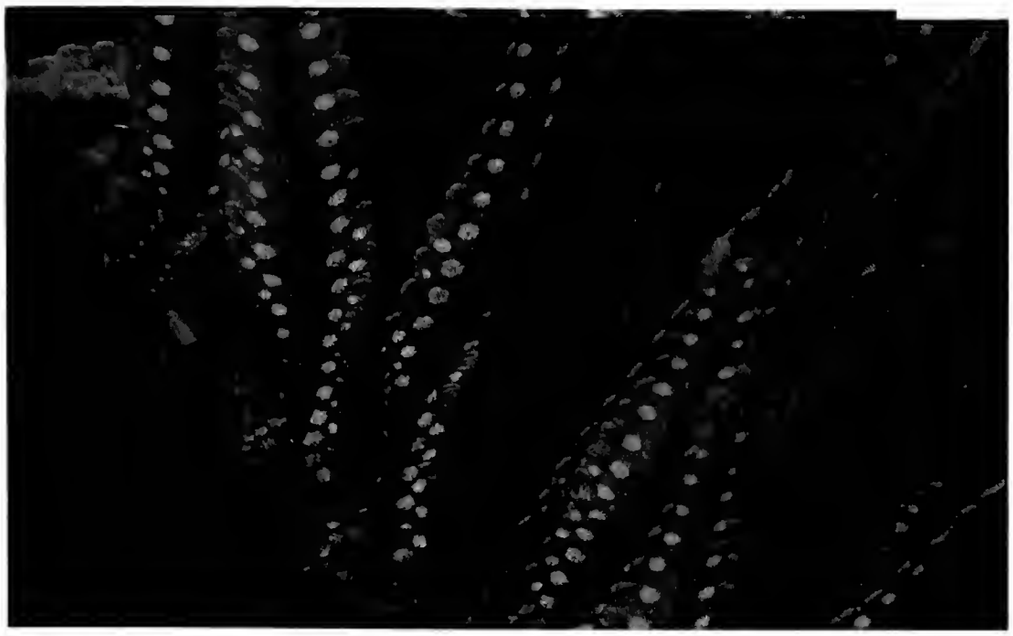
Adenophorum epigaeus

Photo courtesy of Tom Ballinger

Polystichum hillebrandii
Photo courtesy of
Tom Ballinger

Sadleria cyatheoides

Photo courtesy of
Tom Ballinger



Polypodium pelludicum* var. *vulcanicum

Photo courtesy of
Tom Ballinger

Pyrrosia polydactyla
Photo courtesy of Nancy Strahle

Vandenboschia davalliodes

Photo courtesy of
Tom Ballinger

Woodsia scopulina

Photo courtesy of
Richie Steffen

Pyrrosia lingua
'Futaba Shishi'

Pyrrosia polydactyla
'fingered felt fern'

And here is a picture of our roof on the same day, with the confluence of seasons: little mounds of receding snow on spring's burgeoning moss. Perhaps 'spring' is an over-statement.

All photos courtesy of Nancy Strahle

THE VICTORIAN FERN CRAZE

Jennifer Ide
London, England

By **Sarah Whittingham**
Published **Shire Library, Shire Publications Ltd., Oxford UK, 2009**
www. Shirebooks.co.uk, ISBN 978-0-74780-746-9
Price: **USA $12.95 UK £5.99 CANADA $14.95**
Less on the Internet!

For far longer than I can remember, Shire Publications have been publishing their library of excellent little introductory books on a vast range of topics such as rural and domestic crafts and implements, man-made features of the countryside and all kinds of collectables. Now we welcome Sarah Whittingham's introduction to the Victorian Fern Craze.

Ferns played a limited role in the life of people until the discovery by the surgeon, John Lindsay, at the end of the 18th Century, of how to grow ferns from spores. The introductory chapter outlines the events, which followed this discovery, stimulating the growth of enthusiasm for ferns until it was well established by the middle of the 19th Century, while the development of the various aspects of the fern craze is expanded in the chapters which follow.

Collecting Ferns inspires one to read at least some of the popular-style books, which were published during the 19th Century, many encouraging folk to go, 'seek and find', often giving advice on the equipment required and even the clothes to wear. The chapter explains how the discovery of attractive fern 'sports' initiated the onset of fern tourism, and eventually the establishment of fern societies in Britain and the USA. But the inevitable commercial exploitation of ferns from the countryside leaves its nasty taste in the mouth and one can only be horrified at the activities of which some collectors boasted.

The rise of the fern nurseryman and how, in Britain, the repeal of the glass tax in 1845 brought elegant Wardian cases for the drawing room and larger glass housing within the reach of the less well-off, are described in *Cultivating Ferns*, together with the development of landscaped ferneries both under glass and in the larger garden.

The development of imaginatively displayed fern collections in botanic gardens and public ferneries, and of multiplex winter gardens with aquaria or aviaries, orchestras, games areas and places to eat, read and smoke, is the subject of *Ferns for All*. Even lunatic asylums saw the virtue of fern displays for inmates.

Finally, no book on the fern craze can be without a chapter on the fern in *The Decorative Arts* and after reading this one I doubt if readers will be able to pass an antique or

junk shop without at least a quick glance inside.

Like all the books in the series, this one is profusely illustrated with as much as half the page space filled with illustrations, which do more than just enhance the enjoyment of the text. It is unfortunate there is no bibliography, a 'requirement' of the publisher, but forty three places to visit – botanic gardens, public gardens and ferneries, and museums – are listed, admittedly the majority in the UK and Ireland.

If you haven't guessed, I can highly recommend this little book. Small and introductory it may be, but it is packed with information and with her lively text Sarah Whittingham whets the appetite for more. That is to come, I understand, this year and we can only salivate until it arrives. But do not wait until then. This attractive little book, certainly not over-priced, is the perfect hors d'ouvre while you wait.

Fern Festival 2011

Amazing ferns & shade garden plant sale

Center for Urban Horticulture, 3501 NE 41st Street, Seattle

Friday, June 3rd

Plant sale from 1:00 - 6:30 pm
Annual Meeting - 6:30 pm

Lecture, 7:00 pm by Marietta O'Byrne -

Noted shade gardening and hellebore expert

Saturday, June 4th

Plant Sale from 10:00 am - 2:00 pm

INTERNATIONAL SYMPOSIUM ON FERNS AND FERN ALLIES: DIVERSITY, BIOPROSPECTION AND CONSERVATION

THE INDIAN FERN SOCIETY
INSTITUTE OF HIMALAYAN BIORESOURCE TECHNOLOGY
PALAMPUR, HIMAL PRADESH, INDIA
10-12 NOVEMBER 2010

Joanne M. Sharpe
Edgecomb, ME

Fig. 1 - Lighting the conference candle - left to right, P. S. Ahuja, H. K. Goswami, S. S. Bir and J. M. Sharpe.
Photo courtesy of Joanne M. Sharpe

During the summer of 2010 I had the great good fortune to be invited to speak at an international symposium on ferns in India. I was contacted by a fern colleague in India, Professor S. P. Khullar who is Editor of the Indian Fern Journal and an organizer of the conference. I had never been to India before, and when I mentioned it to my husband, he was all for it. There were many e-mails back and forth as we made what arrangements we could for visiting this country of 1.1 billion people and 1,000 species of ferns. The last of my tasks was to check to be sure that our credit cards would not set off security alerts; I found myself speaking to a man in Delhi who became very excited when he learned that we would be there for Divali, and assured us that it was the most amazing festival of the year in India. So when we arrived in Delhi for a few days to overcome jet lag, we found ourselves among friendly revelers for five nights, with some of the most spectacular fireworks displays I have ever seen exploding above the city for hours at the height of the holiday.

That was our introduction to India and the symposium itself proved to be just as exciting and thought-provoking. The conference was held to the north of Delhi in the Himalayan Indian state of Himal Pradesh. We flew up with spectacular views of the snowcapped peaks and were met at the airport in Dharmshala by a representative of the Institute of Himalayan Bioresource Technology (IHBT) which is one of the research centers of India's Council of Scientific and Industrial Research. It was an hour drive through many other small towns to the institute's campus in Palampur ringed by mountains that were not yet snowcapped. We were installed in a guesthouse suite with all the comforts of home including internet access and twice a day we were served tea that had been grown at the Institute. Excellent meals were served three times a day in a large open tent outside the guesthouse.

The conference began with an opening ceremony that was attended by over a hundred and fifty symposium participants and institute staff in a lovely auditorium that was later the venue for a fascinating cultural program of song, dance and comedy put on

by the staff. The formality of the opening ceremony, with the lighting of a conference candle (Figure 1) was very inspiring. We were welcomed by Dr. P. S. Ahuja, the director of the Institute who described some of the work that was being done in their state-of-the-art laboratories, fields and greenhouses. With a staff of 166 (including 48 scientists), their mission is to provide research and development services on economic bioresources in the Himalayas focussing on crops such as tea, medicinal plants and ornamentals. They had recently begun to focus on the economic potential for ferns in the area and during the meeting, we were privileged to participate in the formal opening of their lovely new "fernery" where specimens could be grown and observed . *(See photo pg. 36)*

Introductory remarks by Professor Emeritus S. S. Bir, a renowned pteridologist in India focussed on the importance of Himalayan ferns, announcing that his entire research library would be donated to the Institute to strengthen their holdings on pteridophytes. Dr. H. K. Goswami welcomed visitors as president the Indian Fern Society and emphasized that any aspect of biology can be addressed using ferns as a focal organism. I was invited to speak on the international importance of collaboration at all levels of the research, conservation and economic studies of ferns as a means of insuring their continuing existence.

The technical sessions were very interesting, with talks from all parts of India and all possible topics relating to ferns with approximately 80 participants from India, Nepal, Germany and Mexico. Topics ranged from studies of the Mesozoic fern fossils, evolution of soral arrangement, anatomy of leaf epidermal cells and petioles, taxonomy of fern groups including Tectariaceae and *Marsilea* to the temporal patterns in *Equisetum* growth. While I learned something new from each of the talks and posters, I'll focus on a few of those that specifically addressed the themes of the meeting.

Diversity: It was clear from floristic studies in many parts of India that there is incredible diversity of ferns and that is driven by the huge variety of habitats. For example, within the small northern state of Sikkim (~2000 square miles), elevations range from 300 m to 850 m, with both alpine and subtropical habitats for ferns, resulting in 500 species of ferns representing half the fern flora of India. But threats are present to this fantastic fern flora as well to the flora another northern state, Arunachal Pradesh with 170 species just in the Dryopteridaceae family and floras of several other parts of India. Agriculture (e.g. cardamom production), native harvesting for horticulture (e.g. tree fern trunks and ornamentals), and population pressure are driving the rapid declines in fern abundance throughout the country.

Bioprospection: Testing ferns for economic uses is vital not only for the improvement of the human quality of life, but also for the wealth of information about the ecology, growth and biochemistry that result from rigorous implementation of commercial programs. Speakers at this symposium addressed diseases in cattle resulting from bracken fern, myriad uses for the mosquito fern, *Azolla*, as an easily grown and harvested natural fertilizer, potential for several ferns to remove heavy metals from polluted soils and seasonal availability of antimicrobial compounds in ferns. One very interesting study at an Indian Cancer Institute has found that leaf extracts of the common water clover (*Marsilea)* may play a vital role in controlling the deleterious effects of the pesticide Endosulfan on humans.

Conservation: Several speakers identified the need for fern conservation in the face of various threats, especially to habitat. In the state of Sikkim, the Forest Service controls 80% of the land in a variety of types of conservation areas. But even more important than preserving habitat is the need to educate people about important existing uses of ferns and to identify more ways to increase their economic impact through medicinal uses, pollution control and horticulture. Toward this end, there was a call for emphasis on fern cultivation, growth and harvest.

The Institute is located in the Kanga district of Himal Pradesh, and ferns surveys of both the district and the Institute lands had been undertaken, with the conference organizers Dr. Brij Lal, Dr. Alka Kumari and Dr. S. P. Khullar (Figure 3) among others very much involved in the effort. There are 130 fern species in the district, 45 of which are rare and 40 species of which are already growing on Institute lands. The goal of the Institute's beautiful new fernery is to provide representative plants from each species and then to assess their growth within a common habitat. It is also a place for visitors to appreciate the beauty of ferns, and to learn their names and important features. By committing to the construction and maintenance of such a facility, Dr. P. S. Ahuja of the Institute of Himalayan Bioresource Technology has demonstrated his commitment to finding future economic benefits in ferns. It was a real honor to be there to share in the enthusiasm of so many fine and enthusiastic pteridologists and see this tangible evidence of collaboration.

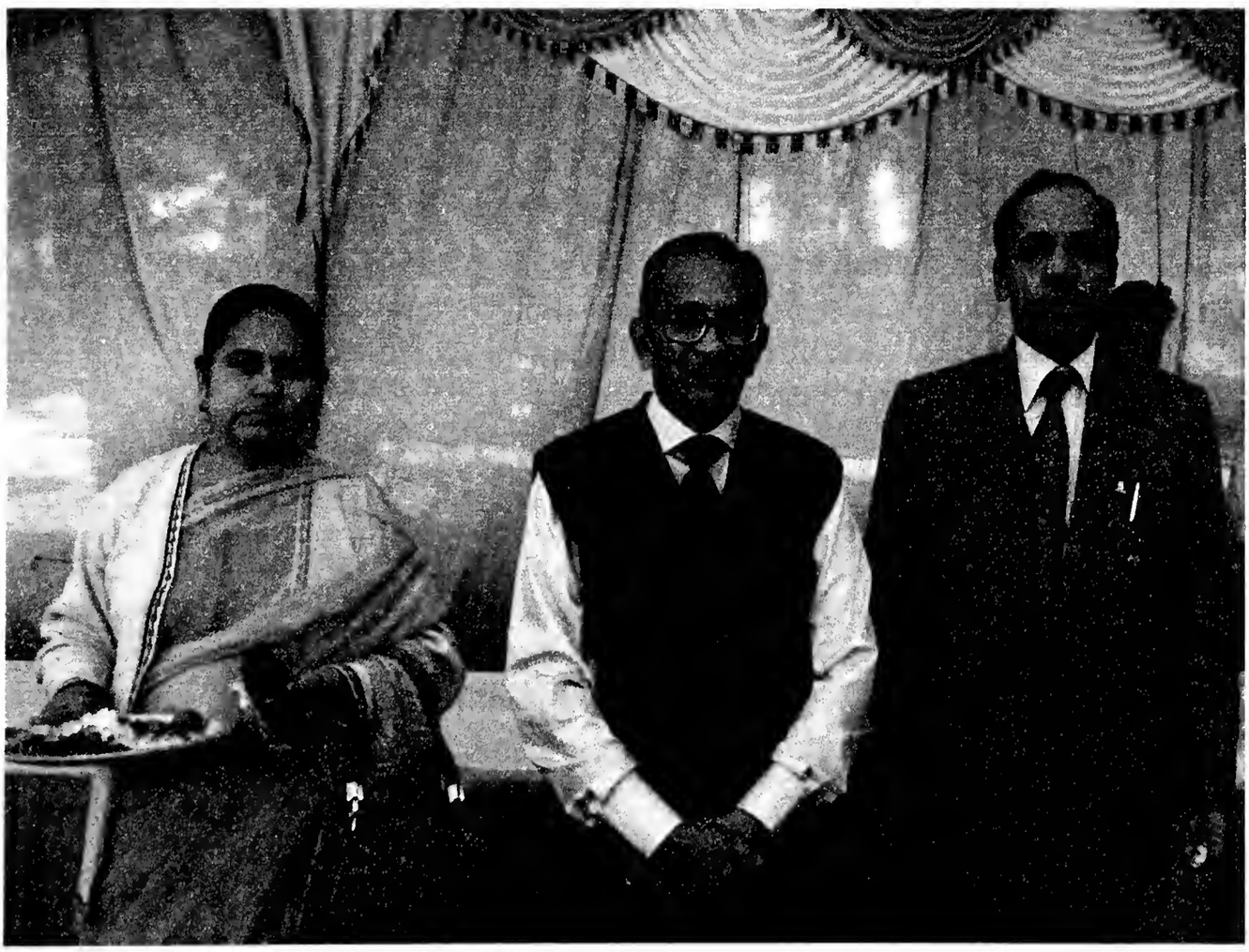


Fig. 3 - Organizers of Indian fern symposium - left to right, Alka Kumari, S. P. Khullar and Brij Lal. *Photo courtesy of Joanne M. Sharpe*

THE INDIAN FERN SOCIETY

Dr. S. P. Khullar
Chandigarh, India

The Indian Fern Society is an International Organization of Researchers/Persons interested in research on any aspect of ferns and fern-allies. It was established in 1983 to promote research work on Pteridophytes world-wide. When formed it had three honorary members; 29 life members and 14 ordinary members. These figures now are 102 and 231, respectively. However an alarming trend is the lack of very few active and young research workers on Pteridophytes. The constitution of the Society provides for an Executive council which consists of: a President, two Vice-Presidents, Secretary-Treasurer, Joint Secretary, seven members and The Editor of The Indian Fern Journal. The Editorial Board besides the Editor has six members. There are also four Advisors.

The Society Honours itself by having Senior Pteridologists as Honorary Members. For 25 years (till 2008), the Society had its head office at Patiala (Punjab, India). The first Secretary-Treasurer and Editor of the Indian Fern Society was Prof. S. S. Bir, Department of Botany, Punjabi University, Patiala. Due to advancing age, Prof. S. S. Bir expressed his inability to continue. It was then decided in the General Body meeting held at NBRI, Lucknow, during the Silver Jubilee Celebrations (29 November 2008), to shift the head office of the Society from Patiala to Chandigarh (1633 Sector 7-C, Chandigarh 160019 India) with Prof S P Khullar as its Secretary,. The Indian Fern Society publishes (annually) 'The Indian Fern Journal', now in its 27th Volume.

The following are the aims of the Society:

(i)To promote researches on Pteridophytes, through suitable research programs, explorations and dissemination of the latest knowledge on these plants.

(ii) To arouse public interest in the conservation of ferns and fern allies, which are under grave threat of extinction due to the destruction of their habitats?

The Society sought to achieve these objectives by:

(i) Seeking cooperation and by cooperating with persons and organizations within or outside the country interested in plant Sciences.

(ii) Organizing lectures, symposia, seminars, excursions, exhibitions *etc*. on Pteridophytes.

(iii) It also encourages publication of monographs, books *etc*. of interest for the development of knowledge on Pteridophytes.

(iv) Encourage original research on ferns and fern-allies.

(v) Instituting at appropriate time, merit certificates, medals, and prizes for persons interested in ferns and fern allies.

ACTIVITIES OF THE SOCIETY:

1. The Society has been publishing annually "THE INDIAN FERN JOURNAL" since 1984 and has successfully published 27 volumes. Articles from Researchers on Pteridophytes are welcome for publication **but the author/s have to be members of the Indian Fern Society.**

The Society also organizes seminars /symposia on Pteridophytes. It has so far organized

nine International/National Seminars/symposia:

(i) National Symposium on "*Biology of Pteridophytes*", January 10-11, 1986, at Department of Botany, Punjabi University, Patiala.

(ii) "*National Conference on Pteridology",* November 25-26 1988, at National Botanical Research Institute, Lucknow.

(iii) International Symposium *"Present & Future Perspectives in Pteridology*", August 4-6, 1989, at University of Rajasthan, Jaipur.

(iv) *"Current Trends in Pteridology",* October 4-6, 1991, at St. Xavier's College, Palayamkottai (Tamil Nadu).

(v) *"Researches on Pteridology*", October 5-7, 1995, at Department of Botany, J.N.Vyas University, Jodhpur.

(vi) *"Fifty Years of Pteridology in India: In Retrospect & Prospect",* November 12-14, 1999, Jiwaji University, Gwalior.

(vii) "*Pteridophytes- the vanishing Plants",* November 25-26, 2002, Department of Botany, Panjab University, Chandigarh.

(viii) Silver Jubilee International Symposium on *"Perspectives in Pteridophytes*", November 27-29, 2008, at NBRI, Lucknow.

(ix) International Symposium on Ferns and Fern Allies: "Diversity, Bioprospection and Conservation". Nov. 10-12, 2010, at IHBT, Palampur (Himachal Pradesh).

AWARDS OF THE SOCIETY:

1. **FELLOW OF THE INDIAN FERN SOCIETY:**

Life Members are eligible for election as Fellows of the Society. The Fellowship is conferred by the Executive Council based on the recommendations and their eminence as Pteridologists. All proposals are to be accompanied by complete biodata, list of publications and with a note on the outstanding contributions of the nominee. Each nomination is to be duly proposed, seconded and supported by two life members. Nominations complete in all respects should be sent to Prof. S. P. Khullar, Secretary-Treasurer, Indian Fern Society, 1633 Sector 7-C, CHANDIGARH-160019 (India)..

2. **PROFESSOR S.S.BIR, GOLD MEDAL IN PTERIDOLOGY.**

This medal is awarded every year to a person not above the age of 50 years (as on 1st January of the year of nomination), for excellent achievements in the field of Pteridology Nominations will be made by the Life/Honorary members/Fellows of the Indian Fern Society.

3. **CERTIFICATE OF MERIT.**

This award is meant for researchers not above the age of 35 years, as on 1st.January of the year in which the proposal is made. Candidates who wish to be considered can send their biodata and List of Publications through at least two Life Members.

All awardees (under items 1-3) will deposit a complete set of his/her publications with the Office of the Society.

Membership: Membership of the Society is open to any person interested in Pteridophytes.

For persons from the Indian subcontinent (including India, Sri Lanka, Pakistan, Nepal, Bangladesh, Bhutan)**:** Life Membership: Rs. 5000/-. Annual Membership: Rs. 450/-(including Rs 50/- as one time enrolment fee)

For Foreign members:

Life Membership: US $500/, Annual Membership US $ 75 (plus US $ 5 as one-time Enrollment fee)

For Institutions: Indian Institutions: Rs. 1000/- (per Annual Volume of Indian Fern Journal) Foreign Institutions: US $ 750/-((per Annual Volume of Indian Fern Journal). All payments are to be made by a bank draft (DD payable at CHANDIGARH, India) made in the name of The Secretary- Treasurer, Indian Fern Society and mailed to Prof. S. P. Khullar, Secretary-Treasurer, Indian Fern Society, 1633 Sector 7-C, CHANDIGARH-160019 (India). Subscriptions from Foreign Institutions/Persons may preferably be sent through Electronic Transfer: The annual/life membership/ subscription can be remitted directly to the Bank Account of Indian Fern Society: [STATE BANK OF PATIALA, MADHYA MARG, SECTOR 7, CHANDIGARH- 160019, INDIA, SAVINGS BANK ACCOUNT NO. 65055644880]. The IFSC Code of the said Bank is stbp0000202, and MICR Code is 160007002. For any other requirement you may enquire from your local Bank for direct remittance. Intimation of direct remittance to the Bank Account of Indian Fern Society must be sent to Prof. S.P. KHULLAR, Secretary-Treasurer, The Indian Fern Society, at email: **sp.khullar@gmail.com.** For any queries concerning Membership and any other information contact Prof. S. P. Khullar, Secretary-Treasurer, Indian Fern Society, 1633 Sector 7-C, CHANDIGARH-160019 (INDIA).

THE INDIAN FERN SOCIETY

ENROLLMENT PROFORMA FOR FRESH MEMBERSHIP (FOREIGN)

I desire to enroll myself as an ordinary/ life member* of the Indian Fern Society. I shall abide by the constitution of the Society, and the decisions taken from time to time.

Name (IN BLOCK LETTERS) _____

Place and Date of Birth_____

Qualifications_____

Field /s of Specialisation_____

Professional details_____

_____

Address for Correspondence _____

PIN_____ **Telephone** (Office) _____ (Res.) _____

Email address._____

The **Annual Subscription*** (for members from abroad) of US $ 75 plus US $ 5 as one-time Enrollment Fee , Or **Life Membership Subscription*** of US $ 500 is enclosed as **DD**+ No_____Dated_____., payable at Chandigarh (India).In favour of '**The Treasurer-Secretary, Indian Fern**

society, Chandigarh, India'. *Please strike out whatever is not applicable.

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Place: _____

Date:_____ Signature: _____

THE INDIAN FERN JOURNAL
House No. 1633, Sector 7-C, CHANDIGARH-160019, INDIA

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Prof. S.P. KHULLAR, Secretary,
The Indian Fern Society, by email: sp.khullar@gmail.com or
House No. 1633, Sector 7-C, CHANDIGARH-160019, INDIA

Date: _____

Authorized Signator: _____

Dryopteris cristata named by Linnaeus – What Was He Thinking??

Jan van Twisk
The Netherlands

Many folks who know or grow *Dryopteris cristata* have wondered (often aloud) why Linnaeus endowed a non-crested fern with such a botanical name. Here we have an interesting and plausible explanation as presented in an e-mail from Jan van Twisk to Tom Stuart at his Hardy Fern Library site.

"Dear Sir,
At your site page concerning the *Dryopteris cristata* it is noted: "cristata" does not apply and nobody knows why Linnaeus chose the name. There is a meaning to the cristata as it is derived from the Latin "Crista" that stands for "Coomb". In Dutch the fern is called "kamvaren" and "kam" and "coomb" are exactly the same word. So "cristata" means "like a coomb" and that applies to the shape of the fertile leafs standing like a ladder and/or coomb. It is as simple as that.

Regards,
Jan van Twisk"

Thanks go to Mr. van Twisk for sharing.
(And as always other suggestions and/or opinions are most welcome.)

Volunteering for the Hardy Fern Foundation

Carolyn Doherty - Puyallup, WA

Volunteering for the HFF has been a great experience for my husband Jerry and myself. Now, into our third year, we are continuing to enjoy it very much. We've learned a great deal about ferns and met lots of wonderful people.

One outcome of our experience is that we have become fern propagators. We've collected spore of uncommon types and grown them at home. We've had some failures and, through some trial and error, succeeded in contributing several new types to HFF for their sales and membership distributions. We've also potted up hundreds, even thousands, of ferns, helped maintain the ferns in the hoop house, and worked out in the wonderful stumpery and garden planting and grooming those ferns.

One of the best parts of volunteering has been the opportunity to participate in the group's activities – hikes, dinners, plant sales, etc., and the opportunity to learn so much from Michelle Bundy and Jo Laskowski.

THE HARDY FERN FOUNDATION
QUARTERLY

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